SMART METER LAN

Smart Energy Meter, compatible with SMA, Fronius, Solar Edge, Solis, DEYE, Huawei, SDM-630, Victron TCP (EM-24 TCP), Victron RS-485 (EM-24 RTU) etc.



100 A and 400 A version with 3.5 mm plug



1 / 5 A version with 6 screw terminals

Manual

LAN Version 1.3

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Table of Contents

1.	INTRODUCTION	3
2.	INSTALLATION	4
2.1	Safety instructions	4
2.2	Device overview LAN	4
2.3	Pin description LAN	4
2.4	IP address	5
2.5 2 2	Current sensors (CT)	5 5
2.6	RS 485 pin out I AN	
2.7	LED status	6
3	COMMISSIONING	6
3.1	First time power on	6
4	GRAPHICAL USER INTERFACE	7
4.1	Overview	
4.2	Settings	8
5	SMA EMETER COMPATIBLE MODE	9
5.1	elgris connection with SMA Home Manager	10
6	MODBUS TCP	
6.1	Register mapping Common Model	11
6.2	Register mapping WYE connect Meter Model	11
7	TECHNICAL SPECIFICATIONS	13

1. Introduction

Dear customer, thank you for purchasing this product. The SMART METER measures your consumption and feed-in values in real-time. These values can be shown anytime, anywhere on our website.

The SMART METER has the following features:

- Single or three phase measurements
- SMA Smart Meter EMETER-10 compatible
- Fronius, Solar Edge, Huawei, Victron EM-24, SDM-630 TCP/RTU etc compatible
- Integrated SUNSPEC MODBUS/TCP Server
- Feed-in and consumption Real-time Measurement
- Cloud solution integration possible for analysis
- Easy to use via integrated web configuration

Specializing in products for renewable energy, Diesel generators and hybrid power solutions, the SMART METER offers the following features standard:

- Wide range power supply input from: 100 240 V_{AC} (50 60 Hz)
- Small footprint.
- Intuitive software.
- Wide temperature range of: -25° +60°C.
- Protection type IP-20.

If you have any questions or if something is unclear, you can contact us in several ways:

E-Mail : <u>support@elgris.de</u>

Phone : +49 (0) 2423 9086501

2. Installation

2.1 Safety instructions

Before installing the product in the end-installation, ensure that the device is not damages during transport and everything looks in a normal way.

All the connecting cables must not be bent or squeezed. This can result in malfunctions, short circuits and defects in the device and/or sensor connected.

Make sure that cables are not damaged when drilling or bolting in place.

The module may only be commissioned after it has been installed contact-free in a casing. This product generates high frequency. Never operate it in the vicinity of medical devices (e.g. pacemakers) and/or medical equipment (e.g. in hospitals). Look for a suitable installation site.

2.2 Device overview LAN

Before wiring the device, be sure that the voltage is switched off.



2.3 **Pin description LAN**

Pin	Description	Minimum	Maximum
1	Phase 1 voltage input	100 Vac	240 Vac
2	Phase 2 voltage input	100 Vac	240 Vac
3	Phase 3 voltage input	100 Vac	240 Vac
4	Neutral input of voltage		0 Vac
5	K input current transformer L1	0 Aac	5 Aac
6	L input current transformer L1	0 Aac	5 Aac
7	K input current transformer L2	0 Aac	5 Aac
8	L input current transformer L2	0 Aac	5 Aac
9	K input current transformer L3	0 Aac	5 Aac
10	L input current transformer L3	0 Aac	5 Aac
1	IP address selection	OFF = DHCP	ON = static
2	System frequency	OFF = 50 Hz	ON = 60 Hz
3	Single or Three phase	OFF = Three phase	ON = Single phase
4	Internal use only	OFF = Default	
	Pin 1 2 3 4 5 6 7 8 9 10 1 2 3 4	PinDescription1Phase 1 voltage input2Phase 2 voltage input3Phase 3 voltage input4Neutral input of voltage5K input current transformer L16L input current transformer L28L input current transformer L29K input current transformer L310L input current transformer L31IP address selection2System frequency3Single or Three phase4Internal use only	PinDescriptionMinimum1Phase 1 voltage input100 Vac2Phase 2 voltage input100 Vac3Phase 3 voltage input100 Vac4Neutral input of voltage100 Vac5K input current transformer L10 Aac6L input current transformer L10 Aac7K input current transformer L20 Aac8L input current transformer L30 Aac9K input current transformer L30 Aac10L input current transformer L30 Aac1IP address selection0FF = DHCP2System frequency0FF = 50 Hz3Single or Three phase0FF = Default

2.4 **IP address**

The SMART METER can be operated via dipswitch 1 with a static address 192.168.1.100 (dipswitch 1 ON when switched on). If you are not familiar with IP addresses, then set dipswitch 1 to OFF and switch on the SMART METER (apply voltage between L1 and N). You can now query the current IP address via your router.

Please note that the IP address can only be set when the module is without power. The current settings are only requested once when starting up.

2.5 **Current sensors (CT)**

Current transformers are required for the SMART METER; direct measurement is not possible!

Depending on your SMART METER version, elgris folding converters with 100 A or 400 A can be used, which have an integrated cable of around 1 meter in length and a 3.5 mm plug.

By default, the arrow on the blue 100 A folding converter must point to the network for a positive value (consumption). If the arrow points to the consumer, the feed-in is positive and the consumption is negative.

2.5.1 Current sensor 100 A dimensions









2.6 RS 485 pin out LAN

	Pin	Description
	1	Not connected
	2	RS-232 TX
12345678	3	RS-232 RX
*******	4	RS-485 B (D-) port 1 / A
	5	RS-485 A (D+) port 1 / A
	6	GND for both RTU ports
	7	RS-485 B (D-) port 2 / B
	8	RS-485 A (D+) port 2 / B

2.7 LED status

The LED on board informs the user about the internal status.

LED colour	Meaning	Action			
Off	No power or internal error	Contact support			
	Internal Error	Contact support			
	Wiring error or export	Check the phase sequence and phase assignment			
	normal operation				

3 Commissioning

Before starting with the commissioning of the SMART METER all safety precautions must be taken which apply to the rules in your country and general safety rules. Never work on a system with a connected grid before working on the power system.

Only a few settings are needed to commission the SMART METER.

Most important is the settings of the current transformer.

3.1 First time power on

Follow the following steps when the system is first time being powered.

- Start the METER by applying power to L1 and N in case you use a single-phase system or L1, L2 and L3 with N for three phase systems. When the SMART METER unit is working properly, the LED is blinking green.
- When using a LAN connection ensure that your computer is in the same network and has an IP address within the same range. In case you are using the DHCP server you need to know the IP address of the SMART METER.
- Connect to the embedded webserver by typing the default address 192.168.1.100 or DHCP address in a web browser. Please note that the used computer must be in the same address range.

- The default password for the settings is "12345678"
- On the Settings Menu select Meter to adjust the CT ratio. The CT ratio is defined as 1: value.
 For example, when you have a CT 5:200 the custom CT value is 40.
 The CT ratio for the SMART METER with 100 A and 400 A select the right value.
- When the CT ratio is changed the power readings on the overview page should match the actual power. A positive value is consumption from the grid, a negative value means exporting to the grid. When this is not correct, check the wiring of K and L of the CT. For current clamps, swap the direction.
- Further settings can be changed depending on the application.
- To ensure all settings are stored properly, perform a reset.

4 Graphical User Interface

The SMART METER contains a web server to adjust the system parameters and display the status of the system.

The integrated web server can be accessed via a normal browser. Supported web browsers are Microsoft Edge, Google Chrome and Mozilla Firefox.

The current address at which you can reach the SMART METER depends on dipswitch 1.

If dipswitch 1 is up (ON), then you can reach the SMART METER at the static address 192.168.1.100. When the static address is changed, use the new address instead.

If dipswitch 1 is down, then the SMART METER receives an automatic address (DHCP).

You can read the current address on the router interface.

4.1 **Overview**



4.2 Settings

NETWORK	METER	SmartZee	LOAD CON	NTROL	PASSWO	RD	
RS485 SETTINGS A	9600	✓ 8	~	None	~	1	~
			Update I	RS485 A			
RS485 SETTINGS B	9600	∨ 8	~	None	~	1	~
			Update I	RS485 B			
CT RATIO	100 A 🗸		d?		Update CT	Ratio	
MODBUS RTU A	1	Disabled	~	U	Update Modbus RTU A		
MODBUS RTU B	1	SDM-630/5	SUNSPE 🗸	U	Ipdate Modb	ous RTU B	
MODBUS TCP	1	SDM-630/5	SUNSPE 🗸	Modb	ous RTU over	TCP/IP	
			Update Mo	odbus TCP			
SMA METER INTERVAL	1000 ms	~		Update SN	MA Meter Int	erval	
POWER READING OFFSET (W)	0		U	pdate Pov	ver Reading	Offset	
SERIAL NUMBER	40:D8:55:06:	0B:76					
METER NAME	SMA1900005	409					
FIRMWARE VERSION	1.16.30						
RESET ENERGY COUNTERS							
RESET TO FACTORY							
RESTART DEVICE	٥						

On this page the settings for the Modbus baud rate, protocol and SMA metering settings can be changed.

The elgris SMART METER will simulate an original meter, make sure the settings match the original meter settings.

No the full mapping per meter is implemented, only the for the common application needed registers. More registers can be added on request.

5 SMA EMETER compatible mode

The elgris SMART METER is compatible with the SMA EMETER-10 and EMETER-20. This means that SMA inverters recognize the elgris SMART METER as being a SMA EMETER.

SUNNY	BOY 1.5	SMA					
🖨 Home	Instantaneous Values	🌣 Device	Parameters	Events	✤ Device Configuration		£ •
Devices in t	the system						1 User Information
	Device name	Device status	Serial numb	er Firm	ware version installed	Settings	Device Configuration
	SB1.5-1VL-40 187	Ø	193008918	7	2.5.1.R	٥	You can select the following settings on your device via the button shown above:
	Meter on Speedwire	0	190001387	В		\$	Change the device names.Update the firmware.
Devices fou	ind						 Save the current configuration of the device in a file. Adopt configuration of a device from a
	Device name Seria			Serial n	number	Settings	Delete the device Add a detected SMA Energy Meter to t
	Serial numbers for usable meters			19000	13878	۵	system. The SMA Energy Meter is use purchased electricity meter and feed-in meter.

The following picture shows an elgris SMART METER in the SMA inverter software:

The SMA inverter transmit the metering data to the online Sunny Places portal. In addition, also the elgris cloud can be used since the SMA only shows the power and not the individual parameters like voltage, current, power factor etc.

Viscan Portice PS System Politics PS System Politics PS System Politics PS System Politic								
Pri System Overview Pri Stand Pri Stand Pri Stand Pri Stand Pri St			Prüfstand	<				
V System Porfile Carrent Status Carrent Status PV System Nonitoring PV Sy			PV System Overview	PV System Overview Prüt	v Prütstand			
Current Nature Curr			PV System Profile	* PV System Data				
Intercry takance Management DV System Kolobook: 15 Intercry Intercry takance PV System Kolobook: 15 Intercry Intercry takance Intercry takance Intercry takance PV System Kolobook: 15 Intercry Intercry takance Intercry takance PV System Kolobook: 15 Intercry Intercry takance Intercry takance Intercry takance PV System Kolobook: 15 Intercry takance Intercry takance Intercry takance Intercry takance PV System Kolobook: 15 Intercry takance Intercry takance Intercry takance Intercry takance PV System Kolobook: 15 Intercry takance Intercry takance			Current Status	Current PV Power	Current consumption	Current PV system status		
Annual Comparison PV System Nonkorring PV			Energy Balance		TT a	0		
			Annual Comparison		A Ow			
PV System Loglook: 15 Inverter V System Progretis PV System Progretis PV System Progretis Progretis PV System Progreti			PV System Monitoring		[888]			
Inverter			PV System Logbook: 15	Energy Balance »	Energy Balance »	PV System Logbook »		
VNNY PORTAL below V System Properties V System Properti			Inverter	PV Energy	CO2 avoided	PV system information		
PV System Properties Properties PV System Properties Software package Software pack			Configuration ~	34 wh February 2018	24 g February 2018	PV system power: 1550 Wp Commissioning: 08/01/2018		
PV System Presentation Device Qverview Sector Qverview			PV System Properties	Total: 3088 Wh	Total: 2.2 kg	PV system profile »		
Vordstand Verdee Overview Device			PV System Presentation	Weather for Inden	Lacrition			
Current Status PoilTrac Global Peak switched on Yes 1,002/2018 (9:30:4) Sec Current Status Vec ARe H4105 1,002/2018 (2:31:32 Sec Current Status Vec ARe H4105 1,002/2018 (2:31:32 Sec Vec Are Monitoring Poice name 1,000/2018 (1:31:02 Sec Vec Are Monitoring Poice name Sint - 00 187 1,002/2018 (1:16:20 Sec Vec Are Monitoring Poice name Solar Inverter 1,002/2018 (1:00:20) Sec Vec Areas Solar Inverter Solar Inverter 1,002/2018 (1:00:20) Sec Vec Areas Solar Inverter Solar Inverter 1,002/2018 (1:00:20) Sec Vec Areas Solar Inverter Solar Inverter 1,002/2018 (1:00:20) Sec Vec Areas Solar Inverter Solar Inverter 1,002/2018 (1:00:20) Sec Vec Areas Solar Inverter Solar Inverter 1,002/2018 (1:00:20) Sec Vec Areas Solar Inverter Solar Inverter 1,002/2018 (1:00:20) Sec Vec Areas Solar Inverter Solar Inverter 1,002/2018 (1:00:20) Sec Vec Areas Solar Inverter Solar Inverter 1,002/2018 (1:00:20) Sec Vec Areas Solar Inverter Sol	Prüfstand PV System Overview PV System Profile	Covice Overview Device: SB1.5-1 Parameters	Report Configuration User Management Sunny Portal products	Cloudless Tomorrow ≫	S2459 Inden Germany Enlarge map >			
Annual Comparison Condry standard set Condry standard set Condry standard set Condry standard set Set Condry standard set <	Current Status	OptiTrac Global Peak switched on		Yes	13/02/2018 09:30:04	€		
Number of the serial no. 190012339 13002018 09:32:29 Control V System Monitoring Device name 581.51/L-01.187 13002/018 11:16:20 Control V System Logbook: 15 Device class Solar Inverters 13002/018 09:30:40 Control Device dass Device type Solar Inverters 13002/018 09:30:40 Control Solvare package Solvare package 205.01.R 13002/018 09:30:40 Control V System Presentation Solvare package Solvare package Solvare package Solvare package Control 13002/018 09:30:40 Control V System Presentation Solvare package Solvare package Solvare package Solvare package Solvare package Control Solvare package Solvare package Solvare package	inergy Balance	Country standard set		VDE-AR-N4105	13/02/2018 12:31:32	€,		
V System Monitoring Packen ame S81.5-1VL-40.187 1,002/018.11:6.20 Sel V System Logbook: 15 Packen ame Solar Inverters 1,002/018.01:0:0.01 Sel V System Logbook: 16 Packen ame Solar Inverters 1,002/018.01:0:0.01 Sel V System Properties Solar Very ever limitation, reg. to grid connection point 1500 1,002/018.01:0.20 Sel V System Properties Tableok active power limitation, reg. to grid connection point 1500 1,002/018.01:0.20 Sel V System Properties Tableok active power limitation, reg. to grid connection point 100 1,002/018.01:0.20 Sel V System Properties Tableok active power limitation as %, reg. to grid connection point 100 1,002/018.01:0.20 Sel V system Properties Tableok active power limitation point 100 1,002/018.01:0.20 Sel	Innual Comparison	Speedwire meter serial no.		1900012339	13/02/2018 09:32:29	E		
W System Logbook: 15 Decic class Solar Inverters 1,302/2018 09:30:40 Image: 1,302/2018 09:30:40 </td <td>V System Monitoring</td> <td>Device name</td> <td></td> <td>SB1.5-1VL-40 187</td> <td>13/02/2018 11:16:20</td> <td>E</td>	V System Monitoring	Device name		SB1.5-1VL-40 187	13/02/2018 11:16:20	E		
Inverter Device type Sumy Big 1.5 3/02/2018/93:0:40 C Configuration Software package 2.05.01.R 3/02/2018/93:2:29 C V System Properties Fallback active power limitation, reg. to grid connection point 1500 3/02/2018/16:20 C V System Presentation Fallback active power limitation as %, reg. to grid connection point 100 3/02/2018/11:62:4 C Sector Devices Sector power limitation and for point 1500 13/02/2018/11:62:4 C	PV System Logbook: 15	Device class		Solar Inverters	13/02/2018 09:30:04	E		
Configuration Software package 2.05.01.R 1.3/02/2018 09:32:29 C V System Properties Fallback active power limitation, reg. to grid connection point 1500 1.3/02/2018 10:16:20 C V System Presentation Fallback active power limitation as %, reg. to grid connection point 100 1.3/02/2018 11:16:24 C Sector Derivée Set active power limit at grid connection point 1500 1.3/02/2018 11:16:24 C	Inverter	Device type		Sunny Boy 1.5	13/02/2018 09:30:04	E		
V System Properties Fallback active power limitation, reg. to grid connection point 1500 13/02/2018 10:16:20 C V System Presentation Fallback active power limitation as %, reg. to grid connection point 100 13/02/2018 11:16:24 C Device Overview Set active power limit at grid connection point 1500 13/02/2018 11:16:24 C	🔆 Configuration 🗸 🗸	Software package		2.05.01.R	13/02/2018 09:32:29	E		
System Presentation Fallback active power limitation as %, reg. to grid connection point 100 13/02/2018 11:16:24 Image: Connection point Device Overview Set active power limit at grid connection point 1500 13/02/2018 11:16:20 Image: Connection point	PV System Properties	Fallback active power limitation, reg. to gri	d connection point	1500	13/02/2018 10:16:20	E		
Device Overview Set active power limit at grid connection point 1500 11/02/2018 10:16:20	PV System Presentation	Fallback active power limitation as %, reg.	to grid connection point	100	13/02/2018 11:16:24	E		
	Device Overview	Set active power limit at grid connection po	bint	1500	13/02/2018 10:16:20	E		

5.1 elgris connection with SMA Home Manager

The elgris SMART METER LAN can also be operated as an energy meter in combination with an SMA Home Manager. The elgris SMART METER can be used either for PV generation or as grid measurement.

Like the SMA energy meter, the elgris SMART METER is not displayed as an independent device in Sunny Portal.

Go to the device overview and select the properties of the SHM.

Antogenouswahl >	Geräteibersicht Übersicht Neugeröt	•]						
Home Hanager	Gerätename: Seriennummer:	Geräte: D	atenannahme:					
Anlagensteckbrief								
Aktueller Status und Prognose	ARUMIBISICI	Parameter actualisieren				\sim		
Energiebilanz	Gerätename 🔺	Seriennummer	Produktgruppe	Datenannahme	Überwachung	Egenschaften	Parameter	Logbuch
Jahresvergleich	B Home Manager 2 050		Surny Home Manager 2.0	٥	0		×	-
Anlagenüberwachung						\sim		
Anlagenlogbuch: 17								
Analyse								
> Report (2)								
🔆 Konfiguration 🗸								
Anlageneigenschaften								
Anlageneräsertation Gerateilbersicht Verbraucherübersicht und -plas								

Then click on "Edit" at the bottom and select "Advanced configuration" at the top.

<	Geräteübersicht Gerät: Home Ma	anager 2 050 Parameter
	Geräteeigenschaften	inveiterte Konfiguration
	Geräteklasse:	Sunny Home Manager
	Produktgruppe:	🕞 Sunny Home Manager 2.0

In the "Meter configuration" menu item you can now select the elgris SMART METER as an SMA energy meter. Finally, the configuration must be saved.

Bezug und Einspeisung:	SMA Energy Meter 1900055144 🗸	
PV-Erzeugung:	kein Zähler Internes Energy Meter	🛈 Es werden die PV-Erzeugungsdaten der angeschlossenen SMA Wechselrichter verwendet.
Messintervall internes Energy Meter:	SMA Energy Meter 1900055144 1000 ms V	
Direkte Zähler Kommunikation:	Geräte IP 1:	0
	Geräte IP 2:	
	Geräte IP 3:]

6 MODBUS TCP

The elgris SMART METER includes a MODBUS TCP server with parameter mapping similar to SunSpec parameter list 203. By offering an open protocol the implementation can be easily adopted to the user needs.

The MODBUS uses port 502 by default.

6.1 Register mapping Common Model

The first register address is 40000 and the registers can be read with function 0x03.

Address	Size	Name	Label	Value	Туре	R/W	Description
40000	2	ID	Common	1	uint32	R	Value = "SunS" (0x53756e53). Uniquely identifies this as a SunSpec MODBUS Map
40002	1	DID	SunSpec_DID	1	uint16	R	Value = 0x0001. Uniquely identifies this as a SunSpec Common Model Block
40003	1	L	SunSpec_Length	65	uint16	R	65 = Length of block in 16-bit register
40004	16	Mn	Manufacturer		string	R	"elgris"
40020	16	Md	Model		string	R	"SMART METER"
40036	8	Opt	Options		String	R	Not used, for future compatibility
40044	8	Vr	Version		string	R	"1.10.15"
40052	16	SN	Serial Number		string	R	19000XXXX (SMA serial compliant)

6.2 Register mapping WYE connect Meter Model

Address	Size	Name	Label	Value	Туре	R/W	Description
							Value = 203
			WYE-connect				Uniquely identifies this
40069	1	ID	three phase	1	uint16	R	as a
			(abcn) meter				SunSpec 203 MODBUS
							Мар
40070	1	1	SunSnec Length	105	uint16	R	105 = Length of block in
40070	Т	L	Sunspec_cengui	105	unitio	n	16-bit register
40071	1	А	Amps		int16	R	Total AC current
40072	1	AphA	Amps Phase A		int16	R	Phase A current
40073	1	AphB	Amps Phase B		int16	R	Phase B current
40074	1	AphC	Amps Phase C		int16	R	Phase C current
40075	1	A_SF			sunssf	R	Current scale factor
40076	1		Voltago I N		int16	D	Line to neutral AC
40070	T	FIIV	VOILage LIN		muio	n	voltage
40077	1	PhVphA	Voltage AN		int16	R	Phase voltage AN
40078	1	PhVphB	Voltage BN		int16	R	Phase voltage BN
40079	1	PhVphC	Voltage CN		int16	R	Phase voltage CN
40080	1	PPV	Voltage LL		int16	R	Line to Line AC voltage
40081	1	PhVphAB			uint16	R	Line voltage AB
40082	1	PhVphBC			uint16	R	Line voltage BC

40083	1	PhVphCA		uint16	R	Line voltage CA
40084	1	V_SF		sunssf	R	Voltage scale factor
40085	1	Hz	Hz	int16	R	Frequency
40086	1	Hz_SF		sunssf	R	Frequency scale factor
40087	1	W	Watts	int16	R	Total real power
40088	1	WphA	Watts phase A	int16	R	Real power phase A
40089	1	WphB	Watts phase B	int16	R	Real power phase B
40090	1	WpbC	Watts phase C	int16	R	Real power phase C
40091	1	W_SF		sunssf	R	Real power scale factor
40092	1	VA		int16		AC apparent power
40093	1	VAphA	VA phase A	int16	R	Apparent power phase A
40094	1	VAphB	VA phase B	int16	R	Apparent power phase B
40095	1	VAphC	VA phase C	int16	R	Apparent power phase C
40096	1	VA_SF		sunssf	R	Apparent power scale factor
40097	1	VAR		int16		AC reactive power
40098	1	VARphA	VA phase A	int16	R	Reactive power phase A
40099	1	VARphB	VA phase B	int16	R	Reactive power phase B
40100	1	VARphC	VA phase C	int16	R	Reactive power phase C
40101	1	VAR_SF		sunssf	R	Reactive power scale factor
40102	1	PF	PF	int16	R	Power factor
40103	1	PFphA	PF phase A	int16	R	
40104	1	PFphB	PF phase B	int16	R	
40105	1	PFphC	PF phase C	int16	R	
40106	1	PF SF	•	sunssf	R	Power factor scale factor
40107	2	TotWhExp		acc32	R	Total Wh exported
404.00	2					Total Wh exported
40109	2	TotwnExpPhA		acc32	К	phase A
40111	2	TotWhExpPhB		acc32	R	Total Wh exported
						Total Wh experted
40113	2	TotWhExpPhC		acc32	R	nhase C
40115	2	Tot\\/hlmn		20032	R	Total Wh imported
40115	2	Totwinnp		accoz	N	Total Whimported
40117	2	TotWhImpPhA		acc32	R	phase A
40119	2	TotWhImpPhB		acc32	R	Total Wh imported
40121	2	TotWhImpPhC		acc32	R	Total Wh imported
40123	1	TotWhSE		sunssf	R	Real energy scale factor
40125	2	TotV/ABhEvn		3011331	R	
40125	2	ΤΟΕΥΑΝΠΕΛΡ		40052	N	
40127	2	TotVARhExpPhA		acc32	R	phase A
40129	2	TotVARhExpPhB		acc32	R	Total VAR exported phase B
10624	~				_	Total VAR exported
40131	2	TOTVARNExpPhC		acc32	К	, phase C
40133	2	TotVARhImp		acc32	R	Total VAR imported
40125	h			2222	Р	Total VAR imported
40135	2	τοτνακηιπρεήΑ		acc32	К	phase A

7 Technical specifications

			LAN Versions depending		
			Wert		
General	Controller		32 Bits CPU		
	Interface LAN		10 / 100 Mbit MDIX		
	Interface RS-485		1200 – 115200 Baud		
	Rated voltage	Vac	230 / 400		
	Operating voltage	Vac	100 – 240		
	Frequency range	Hz	50 / 60		
	Total own consumption	W	<1		
	Current	mA	50 / 100 / 1000 / 5000 (Wandler)		
	Starting current	mA	1		
Accuracy	Voltage	%	0,5		
	Current	%	0,5		
	Active power	%	1,0		
	Apparent power	%	1,0		
	Reactive power	%	1,0		
	Power factor (PF)	%	1,0		
	Active power IEC 62053-22		Klasse 1		
	Protection degree		II		
Environment	IP rating		IP20		
	Weight	kg	0,2-0,3		
	Dimensions	TE	4		
	Connection cross section terminals	mm²	< 4		
	Ambient temperature	°C	-10 - 40		
	Maximum altitude above sea level	m	1000		